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back if they perceive soon after they enter upon their reading that conclusions subversive of their own preconceived notions greet them with exasperating frequency. It will only be the serious, painstaking advanced student who has an overweening enthusiasm for dry details who will and can profit by Mr. Shaw's valuable work. For the latter it will prove a veritable gold mine.

To those interested in the great question of the free coinage of silver by the United States Government at the ratio of 16 to 1, and to those desirous of seeing international bimetallism inaugurated by the chief industrial nations of the world this work contains some startling conclusions. If there is one argument the bimetallist banks on and iterates and reiterates at all times and seasons, it is the compensatory or equalizing effect of the metallic standard; and his stock example has always been the results of the bimetallic law of France lasting from 1803 to 1873 in restraining the fluctuations in the relative values of gold and silver, particularly during the great gold discoveries of the middle of the century. The claim that the action of France gave the world "a fixed and steady ratio" during this period, he declares to be wholly "fallacious." "At no point of time during the present century has the actual market ratio, dependent on the commercial value of silver, corresponded with the French ratio of  $15\frac{1}{2}$ , and at no point of time has France been free from the disastrous influence of that want of correspondence between the legal and the commercial ratio. The opposite notion, which prevails and finds expression in the ephemeral bimetallic literature of to-day, is simply due to ignorance." (p. 178.) This uncompromising statement Mr. Shaw backs up by an array of figures and a colored chart of the variations that will make the most obdurate advocate of free coinage and international bimetallism pause.

FRANK I. HERRIOTT.

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*Statistics and Sociology. (Science of Statistics, Part I.)* By RICHMOND MAYO-SMITH. Pp. 400. Price, \$3.00. New York: Macmillan & Co., 1895.

Professor Mayo-Smith's long expected work on statistics is sure to take front rank in the literature of the subject in the English language. It is not a book of statistical references, but is rather a work devoted to the interpretation of statistical data. Thus it fills the place corresponding in foreign literature to such works as those of Block\* and von Mayr,† which in our literature has thus far been

\* "*Traité de statistique.*"

† "*Die Gesetzmässigkeit in Gesellschaftsleben.*"

vacant. Scattered through the *Journal of the Royal Statistical Society* and in the works of Farr, Newsholme and Longstaff will be found many of the materials upon which such a systematic treatment as that of Professor Mayo-Smith could be built up, but we have hitherto been without a comprehensive summing up of the facts disclosed by statistics in regard to the sociological aspects of population. This constitutes the significance of the present work. The success which greeted Professor Mayo-Smith's earlier sketch, "Statistics and Economics," will doubtless be accorded in still greater measure to his more ambitious effort. The situation of our statistical literature is such that even a poor performance in this field would be of importance. A work which has the scholarly character of the present volume can count upon an assured success.

In his introductory chapter the author discusses the relation of statistics to sociology under the pertinent title "Statistics in the Service of Sociology." The latter science is for him the study of social organization. He cannot conceal the fact that sociologists are far from any agreement as to the essential elements of social organization, but he has the conviction that the majority have gone too far afield in their search. The result is inevitably an ill-digested, unasorted mass of fact, from whose classification no order or system can be obtained. Thus the sociologist is overwhelmed by his material, and unless he exercises some principle of selection involves his science in his own shipwreck. The phenomena which he has to study are the relations and interaction of social groups with and upon each other. Social groups constitute population, and it is only in the analysis of population that they can be studied.

Population can be studied under the aspects of its structure in demographic social and ethnographic classes, its physical environment, its social environment, and the interaction of these upon one another. "Such is the field of sociology, large, indeed, but perfectly well defined."\* It follows as a matter of course that the all important instrument in such investigation is to be found in statistics without whose aid sociology wanders off into vague descriptive efforts, and builds up systems on analogies more or less fanciful. It lacks the concrete basis of fact without which inductive science is a misnomer.

As the instrument of sociology statistics is of the utmost importance and a preliminary investigation of its criteria† becomes essential. The brief statement of the main elements of statistical method with its pitfalls and inaccuracies is admirable as far as it

\* Page 7.

† Chapter II.

goes. Whatever opinion may be held of Professor Mayo-Smith as a sociologist his competence as a statistician is beyond dispute. Intimately connected with the discussion of statistical method in general is the author's exposition of the plan followed throughout the work. He discusses, the "sociological purpose" of the inquiry, the available "statistical data," the "scientific tests" of the accuracy, and appropriateness of the figures commonly used and concludes with a "reflective analysis" of the results obtained. This formal arrangement is rigidly adhered to in each chapter which follows.

Having thus characterized somewhat in detail the author's general attitude it is perhaps unnecessary to follow him through the treatment of the remaining chapters. He brings us an abundance of concrete facts skillfully woven together in a compact narrative. His work now falls into several books which correspond to the divisions made in the introduction. The first (pp. 36-177) treats of the demographic features of population, sex, age, conjugal condition, births, marriages, deaths and sickness. This is the most satisfactory portion of the work, for the whole field of demographic research is carefully covered, and an acute analysis of the data and conclusions based upon them is given. Statisticians will note with satisfaction the prominence given to the factor social condition in the explanation of phenomena too often carelessly ascribed to climatic and other physical causes. The second book (pp. 181-288) treats of social features of population. The title seems hardly well chosen for a division which includes in addition to families, dwellings, education, religious confessions and occupations, chapters on the infirm and dependent, on suicide and on crime. In the third book on ethnographic features, are treated race, nationality and migrations. The concluding fourth book discusses physical environment, relation of population to the territory which it inhabits, and social environment, the size of communities and the concentration of population in cities. This enumeration of subjects must serve as an indication of the specific contents of the book. To do equal justice to all parts it would require far more space than the limits of a review allow, should we attempt to summarize the contents for those unfamiliar with statistical research. To others the titles of chapters will give a sufficient clue to their contents.

Our exposition of the plan and contents of the work leads us to certain general critical observations, which appear especially important in view of the place which Professor Mayo-Smith's work seems destined to take in our statistical literature.

We cannot feel that the general tone of the introduction is happy,

for it will satisfy neither sociologist nor statistician. While the author declines to discuss the question whether statistics is the whole of sociology or merely a science of method, he ignores his disclaimer and treats statistics as if it were the science of sociology. This general attitude will embarrass him when he puts out his second volume, "Statistics and Economics." The attempt, should he make it, to master economic life, as he has tried to master social life, by the aid of statistics, will have far less chance of success. He will then appear to have two sciences of statistics, one sociological, the other economic in its content. This confusion is the inevitable result of attempting to treat statistics as a science of objective fact. Formulations of the "object" of statistical research err in vagueness or in narrowness. In the first case they embrace unrelated fields of research, in the second case they fail to embrace many phenomena which the formulation should include. The only unambiguous attitude toward the science of statistics is that it is essentially a science of method.

We would not wish to appear as threshing over old straw and feel it necessary to define further the purport of the foregoing criticism. It is not in any sense to depreciate the value of such a work as that of Professor Mayo-Smith. On the contrary we believe that it has a greater usefulness than such a work as that of Meitzen, which treats exclusively of statistical method, and is only vaguely comprehensible to the general reader. The latter and the student of economics will gain more insight into statistical method from Professor Mayo-Smith's book than from Meitzen. The writer has been firmly convinced by experience that the only practicable way of teaching statistics is to take it up on its objective or concrete side rather than its methodological or abstract side.

The distinction is not, however, without a difference. There is a fundamental and an important difference of *emphasis*. If the work in question had treated the method as the essential point in statistical science, the author would have rearranged his chapters, and had he treated his data as exemplifications of statistical method, interesting for their own sake, it is true, but not necessarily intimately organically connected, he would have avoided any semblance of quarrel with the sociologists. As it is they may justly claim that his work is not well rounded, and that it is incomplete. The relative proportion of one chapter to another, depends rather on the wealth of statistical material, than on their organic connection, while the factor of social condition, so justly emphasized by the author, receives a scanty treatment at his hands. The sociologist would undoubtedly demand that the questions of income and the like,

which characterize the social position of the wage-earner, should find a treatment in this book rather than in the promised second part. If we may anticipate the contents of the second part from what we have before us we may foresee a like difficulty between the author and the economists.

A second criticism concerns the rigid formalism of the book, which is partly an outcome of the author's attitude toward sociology. Each chapter is divided into four heads—sociological purpose, statistical data, scientific tests and reflective analysis. Such a formal method need not shock the statistician, but he would naturally apply to it the maxim, that each column in a table should always contain the same thing and serve a distinct purpose. Two of the author's categories, sociological purpose and reflective analysis, run into one another continually. If the first is long in any chapter, the second is short. Unless he borrows materials from his reflective analysis, the author's sociological purpose can usually be summarized as follows: The purpose of this chapter is to find out the facts. The term sociological purpose at the heading of each chapter has an aspect of profundity which is totally belied by its contents. Nor can it be discerned that the author has always distinctly separated his scientific tests from the exposition of the statistical data. To have the value which the author ascribes to it\* such a formal arrangement should be adhered to not on the surface only, but in the real body of the treatment.

A third criticism pertains to the statistical material upon which conclusions are based. In many chapters it is drawn exclusively from foreign sources. The author shows a wide acquaintance with the results of research in foreign lands, which shall not be contested. The statistician knows that where material relating to the United States is not given it is often because satisfactory data are not available. Yet the general reader of an American book looks for such data and does not know that they do not exist. In many cases, however, statistical data relating to the United States, or at least a part of it, might have been introduced where we find no clue to our home conditions. In view of a popular statement so often repeated that it is generally believed, that conditions in the United States are altogether different from those in European countries, the omission of American data becomes a serious defect.

It will be observed that our criticisms have thus far touched only upon the general features of the work. Taking each chapter by itself, considering it apart from the entire work, it must be said

\* Page vi.

that Professor Mayo-Smith's work has been well done. It is closely reasoned when there is occasion for analysis. The main statistical facts are presented without greatly encumbering the text with tabular matter, and in such a way as to leave no doubt as to their proper interpretation. Viewed by the topics considered, there is little criticism to be made except for a certain awkwardness of presentation which results from the author's formal division of his material. It may be said that Professor Mayo-Smith has executed better than he planned. In the treatment of special topics the statistician will recognize with pleasure his skillful analysis of the material presented, and his eminently sane and cautious conclusions. It is the best praise which can be allowed to a statistician, that he does not overvalue the significance of his materials, and this can be accorded to Professor Mayo-Smith in the fullest sense.

ROLAND P. FALKNER.

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*Vergil in the Middle Ages.* By DOMENICO COMPARETTI. Translated by E. F. L. BENECKE. Pp. xvi, 376. Price, \$2.50. New York: Macmillan & Co., 1895.

In the first part of this work, "the Vergil of Literary Tradition," Professor Comparetti traces the poet's popularity from the best days of the Empire down through the Middle Ages. He brings out forcibly the importance of "the grammatical, rhetorical and erudite elements," in the *Æneid* in preserving Vergil's fame during the period of decadence. He then shows to what extent the scholastic traditions survived in the Middle Ages and how far Vergil's reputation was affected by his supposed prophecy of Christ (in the Fourth Eclogue). After setting forth the various uses to which the poet was put in the Middle Ages, he concludes with an analysis of the Vergil of the Divine Comedy and of the Dolopathos. This section is considerably longer than the second and contains several excellent chapters, analyzing various tendencies of mediæval thought. Especially good are the essays on "Christianity and the Middle Ages," "grammatical and rhetorical studies in the Middle Ages," and "clerical conception of antiquity in the Middle Ages." The two chapters on Dante will be read with keen interest.

But the first part of the book is really subsidiary to the second, "the Vergil of popular legend." Previous writers had almost entirely neglected to trace back the literary tradition, and consequently their works on Vergil, the magician, lacked completeness. The popular legends can be explained only when one understands how